WE CLAIM:

1. A mammalian trehalose receptor, comprising:

(i) a protein comprising any of the amino acid sequences of SEQ ID NOs:1, 2, 3 and 5; or a protein comprising any of the amino acid sequences thereof with a deletion, replacement, or addition of an amino acid(s); or

(ii) a protein comprising any of the amino acid sequences of SEQ ID NOs:1, 4 and 5; or a protein comprising any of the amino acid sequences thereof with a deletion, replacement, or addition of an amino acid(s).

2. An animal cell, comprising an artificially expressed trehalose receptor of claim 1.

3. A process for producing an animal cell comprising an artificially expressed trehalose receptor, said process comprising a step of introducing an expression vector comprising an integrated DNA into an animal cell, said DNA encoding:

(i) a protein comprising any of the amino acid sequences of SEQ ID NOs:1, 2, 3 and 5; or a protein comprising any of the amino acid sequences thereof with a deletion, replacement, or addition of an amino acid(s); or

(ii) a protein comprising any of the amino acid sequences of SEQ ID NOs:1, 4 and 5, or a protein comprising any of the amino acid sequences thereof with a deletion, replacement, or addition of an amino acid(s).

4. A method for detecting trehalose using an animal cell comprising an artificially expressed trehalose receptor of claim 1 or 2.

5. The method of claim 4, which detects a

biochemical reaction induced by the binding of trehalose to said trehalose receptor.

6. The method of claim 5, wherein said biochemical reaction is detected by measuring the influx of calcium ion.

7. A kit for detecting trehalose, comprising the animal cell of claim 2 and a reagent for detecting calcium ion.